

The Great Lakes Observing System: Serving up data to support beach management in the Great Lakes

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Overview

- Background on GLOS
- Role of GLOS in the Great Lakes
- Overview of the GLOS system and capabilities
- GLOS Tools and Services
- What can GLOS do for you?

A Global Voice for the Great Lakes

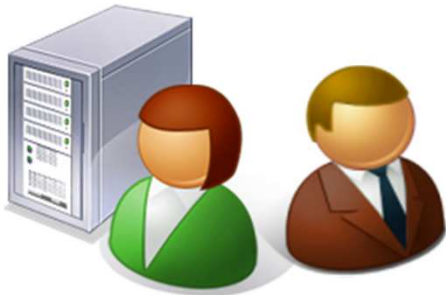


LARGER SCALES OF DATA INTEGRATION



GLOS Role

Research Community



Decision-Makers



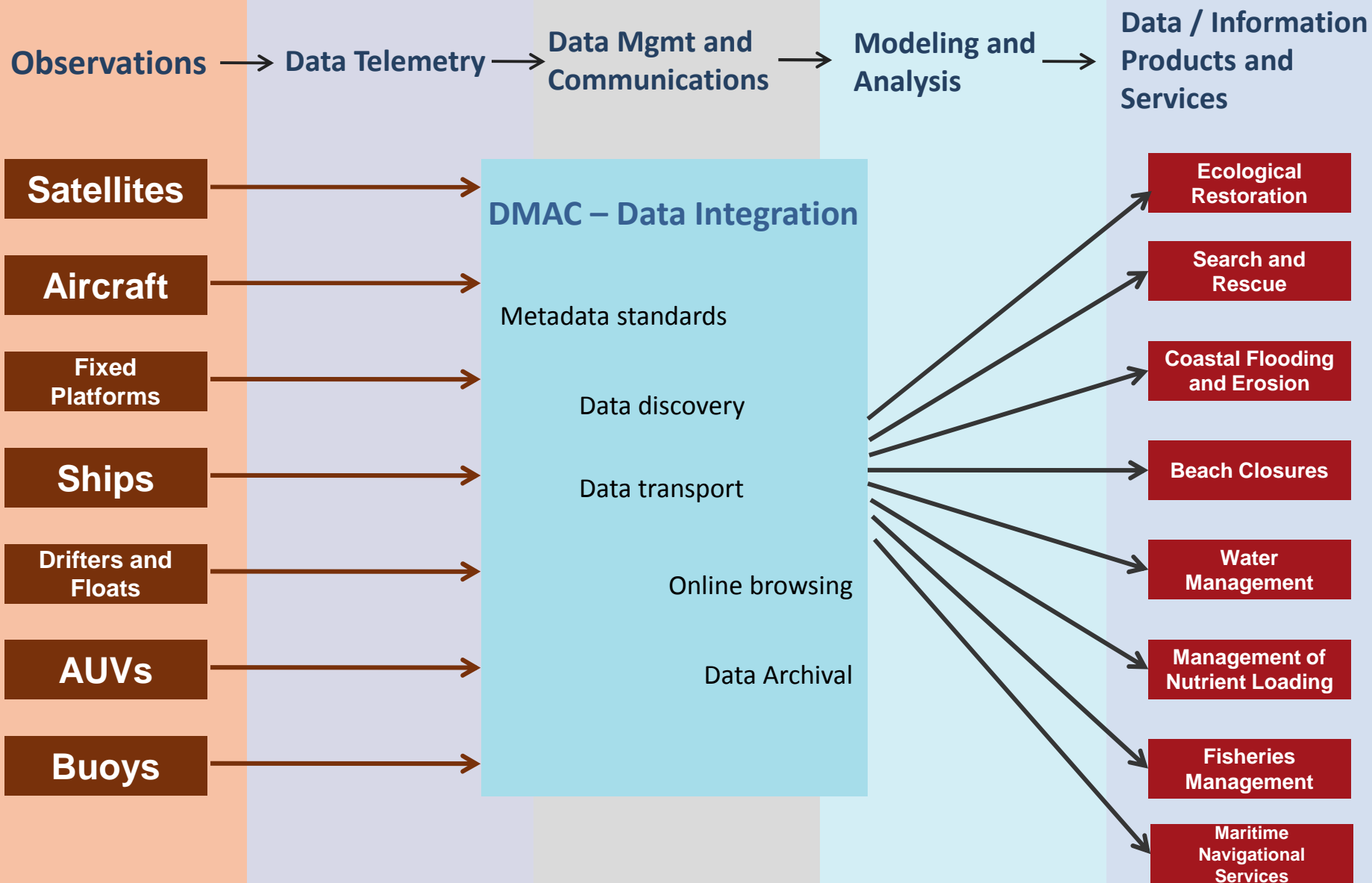
Resource Managers



- Facilitate the **coordination** of the Great Lakes observing network
- Support and enhance the operation of Great Lakes **observation** capability
- Improve access to high-quality, **integrated data**
- Develop and enhance data products and **decision-support tools**

The GLOS Enterprise

Integrated Technology / Data / Applications Architecture in the IOOS Framework



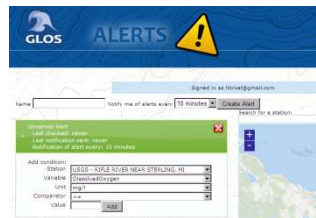


Metadata / XML
database

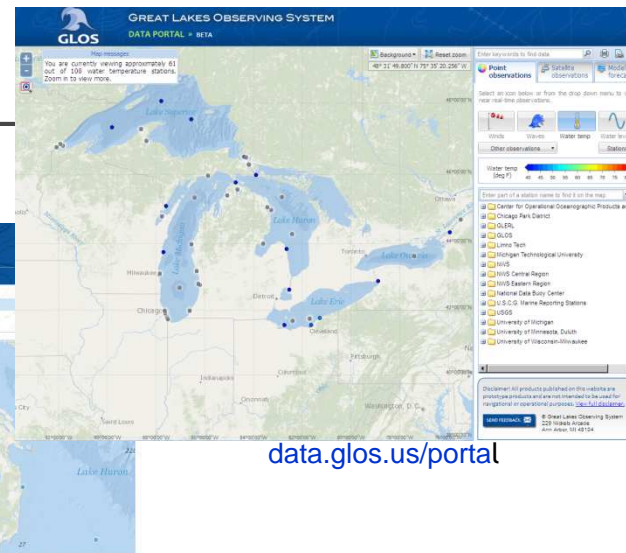


searching

Harvested
data



alerts.glos.us



data.glos.us/portal

GeoNetwork Metadata



boaters.glos.us

Driven by User Needs

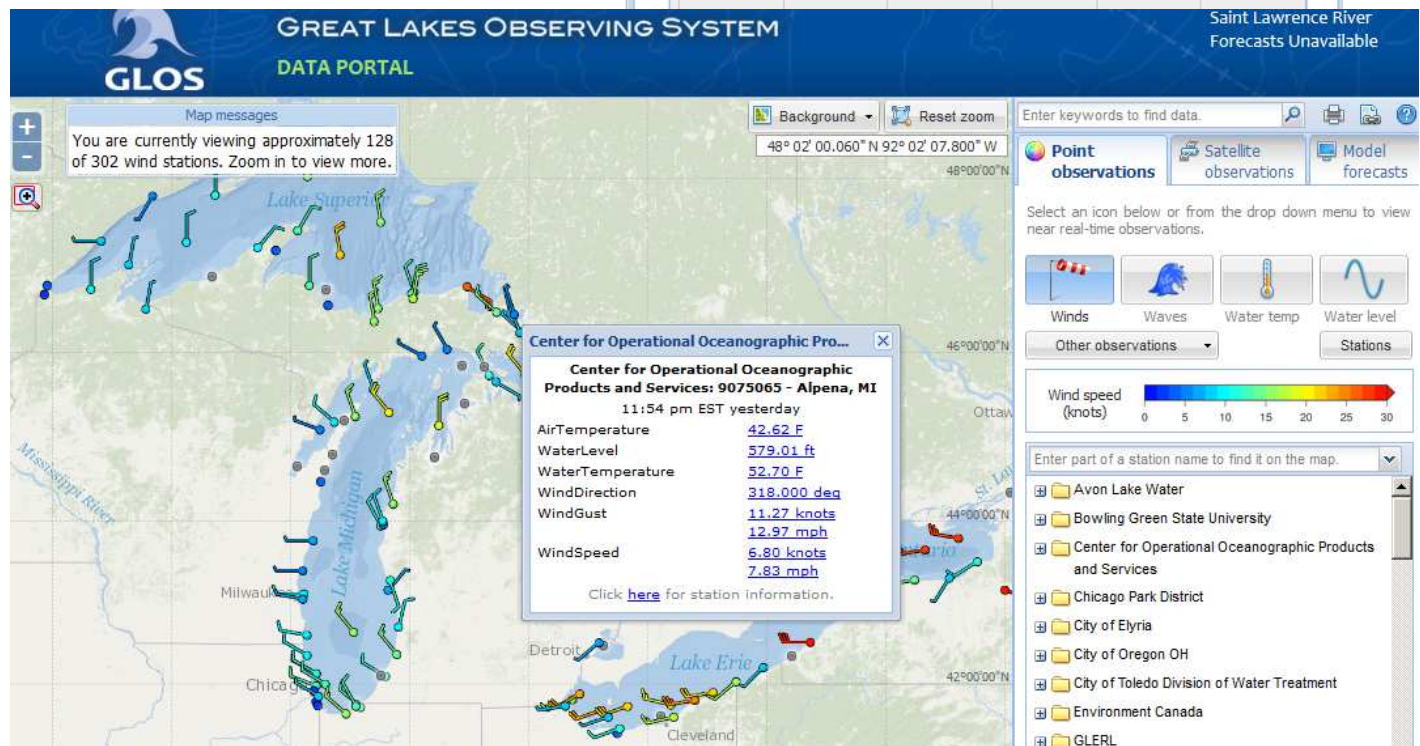
- A key objective for GLOS is to deliver data in a variety of ways, with the goal of developing easy-to-access data and decision support products.
- Focus Areas
 - Ecosystem Health
 - Maritime Operations
 - Public Health and Water Security
 - Climate Change Adaptation
- Prioritizes activities according to stakeholder needs

GLOS Data and Tools

Some Highlights

Data Access: GLOS Data Portal

- POINT OBSERVATIONS
- SATELLITE OBSERVATIONS
- MODEL FORECASTS
- SEARCH



MyGLOS



MyGLOS

Login / Create Account

Catalog

Map

Search catalog

Category

All

Beach Health

Binational

Climatology

Environmental

HABS

Hydrologic

Invasive Species

Models

Nearshore

Nutrients

Observation Buoys

Other Resources

Satellite

QA / QC

Water Temperature

Water Quality

45165 - Oregon, OH Find on Map Add to Map More info

GLOS in-situ buoy in Lake Erie. Owned and maintained by LimnoTech. This buoy is sponsored by the City of Toledo Department of Public Utilities, Division of Water Treatment to monitor conditions near the water intake for the Collins Park Water Treatment Plant's intake crib located 3 miles offshore of Oregon, OH.

45171 - Granite Island Buoy

Monitoring buoy on Lake Superior near Granite Island (located about 12 miles northwest of Marquette in the Upper Peninsula, Michigan), owned and operated by Northern Michigan University. The buoy provides minute-by-minute observations of weather, water temperature and wave activity.

45172 - Grand Marais Buoy

Monitoring buoy on Lake Superior near Grand Marais about 4 to 5 miles off shore, owned and operated by Northern Michigan University. The buoy provides minute-by-minute observations of weather, water temperature and wave activity.

ATW20

The ATW20 buoy is located approximately 2 km offshore of Milwaukee's Atwater Beach in Lake Michigan, and a two-point mooring system secures the buoy over sand and rock substrate in 20 m of water. The CB-1500 coastal data buoy is equipped with solar-powered water quality and meteorological sensors that collect data every 30 min, as well as a cellular modem for real-time data communication.

Avon Lake Pump Station

12 ft down in wet well

City of Toledo Water Intake Crib

Elyria Pump Station

15 ft down in wet well at pump station

GB17

The GB17 buoy is located approximately 40 km northeast of the mouth of the Fox River at the southern end of Green Bay. The CB-1500 coastal data buoy is secured by a two-point mooring system over a mud substrate in 13 meters of water. All equipment is solar powered and monitors physical, ecological, and meteorological parameters. Data is collected every 30 minutes using a cellular modem, allowing near real-time data collection and water quality monitoring.

Gibraltar Island Station

Grand Traverse Bay Observing System Station 1

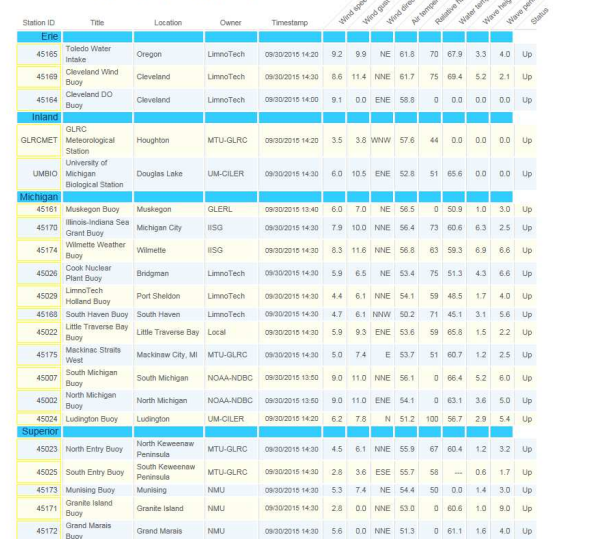
In-situ buoy in Lake Michigan Grand Traverse Bay, operated by the University of Michigan Marine Hydrodynamics Laboratory.

1 2 3 4 5 6

**Great Lakes
Observing
System**

[home](#)

- ◆ Stations with data in the last 3 hours
- ◆ Stations with no recent observations

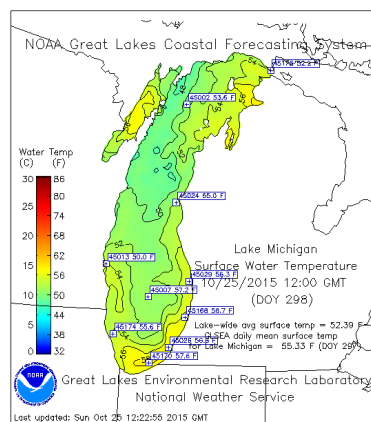


User-friendly overview of primary data on front page

Direct Data Access: Great Lakes Coastal Forecasting System

- The NOAA GLCFS is a model that provides nowcasts and forecasts for waves, currents and temperatures in near-realtime
- Data is updated on the GLOS THREDDS server (TDS) after each run of the model and archived from 2006
- The GLOS **Point Query tool** provides quick access to GLCFS input data and model output for a given location and time period

<http://data.glos.us/glcfs/>
<http://www.glerl.noaa.gov/res/glcfs/>

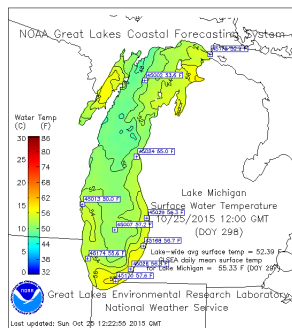


- 1. Enter Longitude, Latitude and Lake Name**
☒ Decimal Degree ☐ Degrees Minutes Seconds
Longitude:
Latitude:
Lake Name:
- 2. Select the Model Type**
☒ Nowcast 2D ☐ Nowcast 3D ☐ Forecast 2D ☐ Nowcast 1D
- 3. Select Date and Time**
Time Zone:
☒ Date/Time Range ☐ Latest
Start Date/Time: /
End Date/Time: /
- 4. Choose Parameters for Output**
Unit of Measure:
☐ Mean Water Depth
☐ Water Level Displacement
☐ Water Velocity at Surface
☐ Depth-Averaged Water Velocity
☐ Significant Wave Height
☐ Wave Direction
☐ Wave Period
☐ Ice Concentration

Making Data Accessible - Virtual Beach

- GLOS is helping to bring real-time data to beach managers
- GLOS data services enable the development and implementation of daily water-quality "nowcasts" at coastal beaches throughout the Great Lakes
- Collaborative effort between EPA, USGS, Wisconsin Sea Grant, and WI DNR

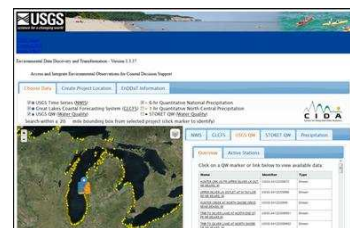
GLCFS



GLOS THREDDS
server (TDS)

THREDDS

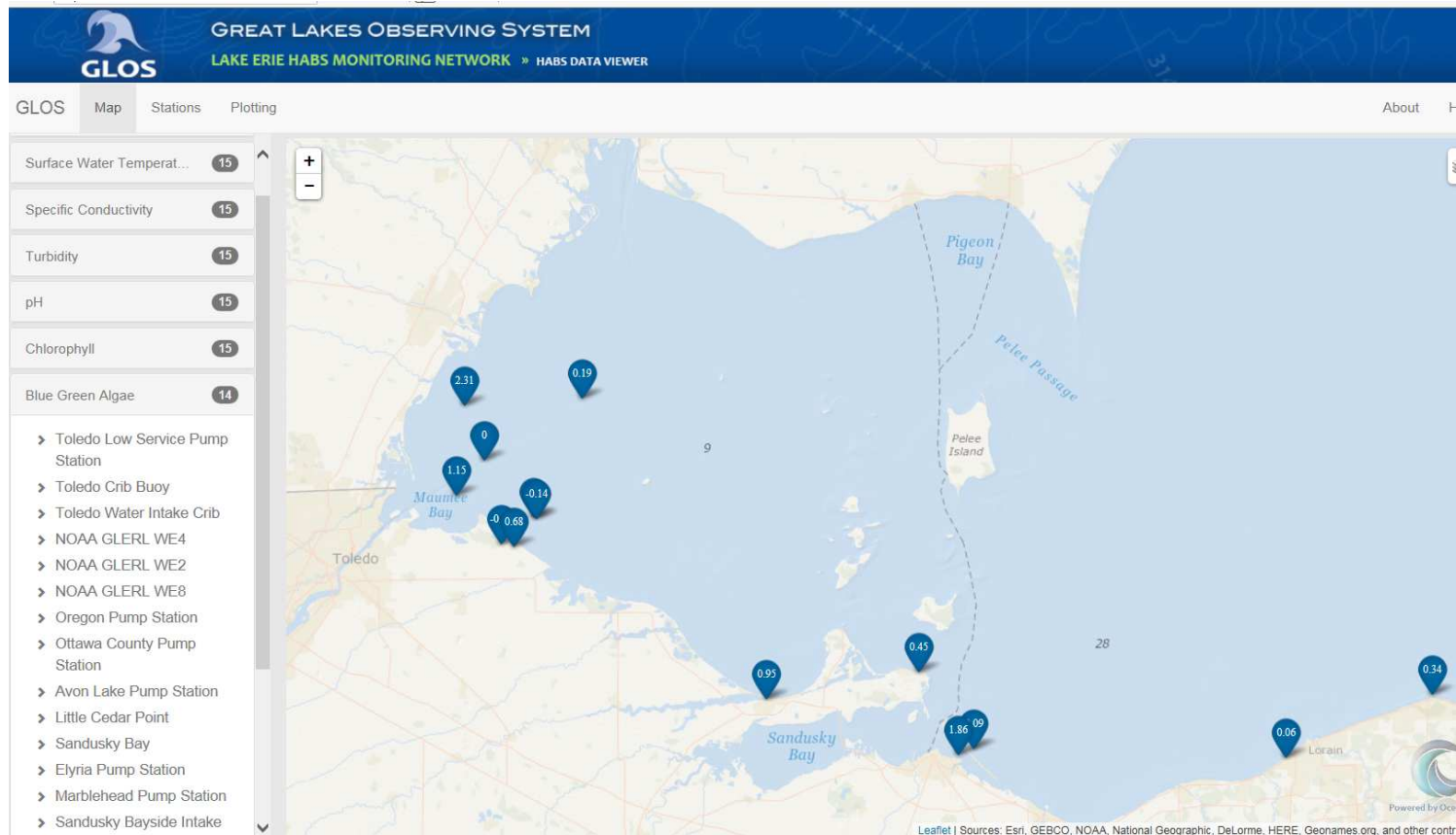
EnDDat



Virtual Beach



Specialized Tools: Lake Erie HABs Viewer



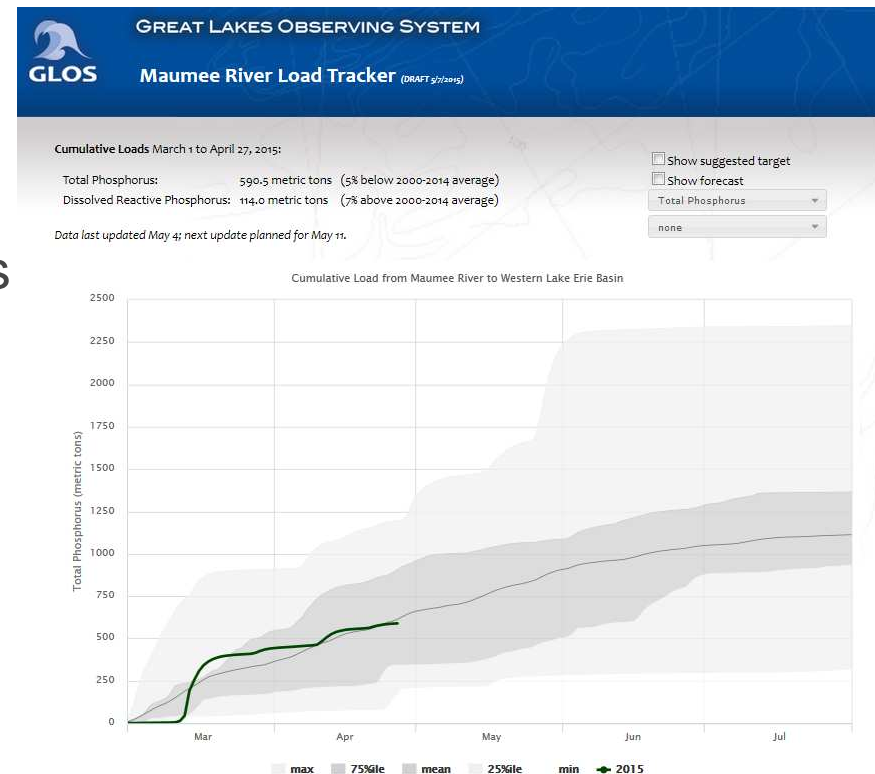
Data Availability: Nutrient Loads to Lake Erie

Heidelberg University
National Center for Water Quality Research



Maumee River Nutrient Tracker

- Heidelberg monitors nutrient concentrations and calculates loads.
- Project supports regular schedule for GLOS-hosted publication and display.



Use GLOS data in your own tools

- myBeachCast
- The Great Lakes Commission's website and mobile app
- Deliver critical information about beach advisories and related human health information



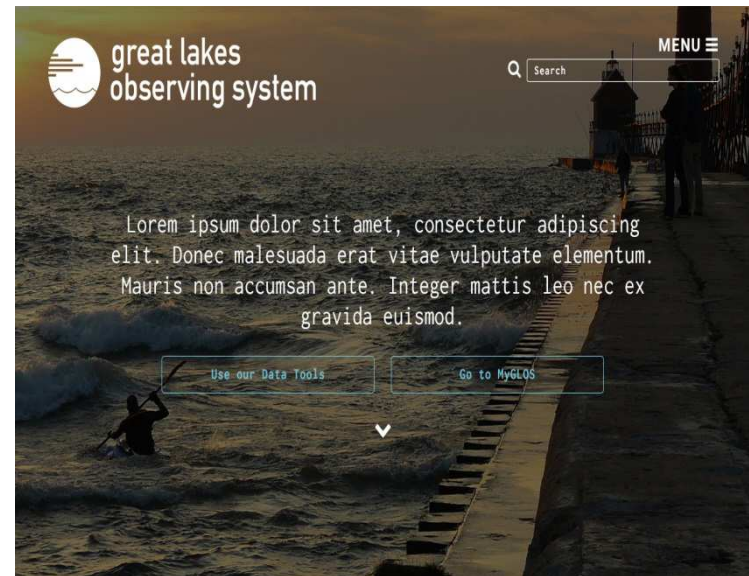
Recap

GLOS is **network** of people and technology coordinated to provide free, easily-accessible data about the Great Lakes

- Provide coordination and support for observing
- Help to share and make data accessible
- Web portals to view, download data
- Data management facilitator
- Variety of decision-support tools

Connect with GLOS

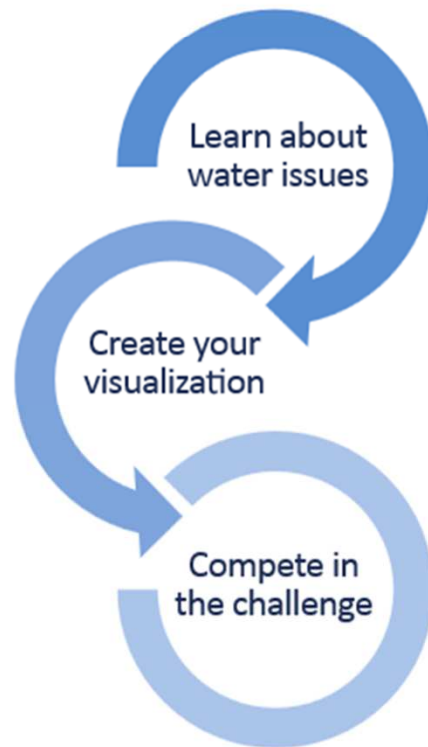
- Membership
- Annual Meeting
- Grants & Mini-grants
- Use our data
- Share your data
- Use our tools (and give feedback)
- What are your data needs?





Visualize Your Water:

A GIS VISUALIZATION CHALLENGE for HIGH SCHOOL STUDENTS



- High school students are invited to use **DATA VISUALIZATION** to tell a story about water quality issues, that will **INSPIRE ACTION**.
- Winners will be chosen in the following topic areas: **WATER AVAILABILITY/DROUGHT, NUTRIENT POLLUTION** and **URBAN STORMWATER**.
- **GEOGRAPHIC INFORMATION SYSTEM (GIS) SOFTWARE** is available to all U.S. K-12 schools (see below)

Launches January 2016
<http://esriurl.com/2016edchallenge>



Great Lakes Data Challenge 2016

- Hackathon for the Great Lakes
- Appathon
- Prizes

Join Us!

- Planning Committee
- Judge
- Sponsor
- Submit a Challenge or an Idea
- Resource Expert
- Participate

Thank You!

- Questions?
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- amaguire@glos.us